TA02

Aerospace I

09:00-11:00 **Chair1 : Byoung-Sun Lee (ETRI, Korea)**
Room : Base 1st Floor-Inntal **Chair2 :**

09:00 – 09:20 **TA02-1**

Measurement Delay Error Compensation for GPS/INS Integrated Systems

You-chol Lim, Joon Lyou(Chungnam Nat'l Univ., KOREA)

The INS provides high rate position, velocity and attitude data with good short-term stability while the GPS provides position and velocity data with long-term stability. By integrating the INS with GPS, a navigation system can be achieved to provide highly accurate navigation performance. For the best performance, time synchronization of GPS and INS data is very important in GPS/INS integrated system. But, it is impossible to synchronize them exactly due to the communication and computation time-delay. In this paper, to reduce the error caused by the measurement time-delay in GPS/INS integrated systems, error compensation methods using separate bias Kalman filter are suggested for both the ...

09:20 – 09:40 **TA02-2**

Development of the Algorithm to improve the performance of GPS for a Navigation System

Jaehoon Rhee, Changwan Jeon(Soonchunghyang Univ., KOREA), Wonchul Hong(Naniware co., KOREA), Hyunsoo Kim(Konkuk Univ., KOREA)

1. Introduction
2. The Feature of GPS Data
3. The Correction by Dead Reckoning (DR) Method
4. The Modified Simple DR Algorithm
5. The Smoothing
6. The Modification of Dilution of Precision (DOP)
7. Conclusion

09:40 – 10:00 **TA02-3**

Extending GPS Service Indoors by use of Synchronized Pseudolites

Doohee Yun, Changdon Kee(Seoul Nat'l Univ., KOREA)

Pseudolite (PL) is a kind of signal generator, which transmits GPS-like signal at the ground. However our own made PL is different from a GPS satellite in clock accuracy. GPS satellites are synchronized by use of high precision atomic clocks. But because our PLs use low cost temperature controlled oscillators (TCXO), so it is very difficult to synchronize them. Hence, we should install reference station and use Differential GPS (DGPS) algorithm to calculate user position. By use of this method, we already developed indoor navigation system a few years ago. We named it as 'Asynchronous Pseudolite Indoor Navigation System'. However, this system requires that sampling times of all the receivers...

10:00 – 10:20 **TA02-4**

GPS/DR Integration for Mobile Robot Navigation

Seonil Yoon, Kook Hyun Yim(LG Co., Ltd, KOREA), Hyun Soo Kim, Gyu-In Jee (Konkuk Univ., KOREA)

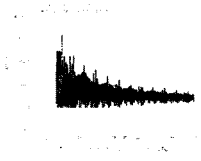
Recently, number of navigation system using GPS and other complementary sensor has been developed to offer high-position accuracy. In this paper, we developed navigation system for mobile robot integrating GPS and DR sensor information provided by fiber optic gyroscopes and encoder information. In the case of short-term applications, integrating this encoder and gyroscope through Kalman filter reliable positioning can be obtained. And for the long-term applications we developed GPS/DR Integration algorithm using Kalman filter.

10:20 – 10:40 **TA02-5**

Derivation of the SGP4 Drag Term from the Two Osculating Orbit State for the Low Earth Orbit Satellite

Byoung-Sun Lee, Jae-Woo Park(ETRI, KOREA)

- NORAD SGP4 Model
- Conversion of the Osculating Orbit State into the NORAD TLE
- Derivation of the SGP4 Drag Term
- Conversion of the KOMPSAT-1 Orbit
- Effect of the SGP4 Drag Term
- Derivation of the KOMPSAT-1 B* Value
- Figure. Derived B* values from KOMPSAT-1 MAPS orbit state with considering the argument of latitude



10:40 – 11:00 **TA02-6**

DSP Architecture for Weak Signal Acquisition in Assisted GPS

DEUK JAE CHO, IL HEUNG CHOI, SUNG WOOK MOON, SANG JEONG LEE(Chungnam Nat'l Univ., KOREA), SANG HYUN PARK(NAVICOM CO. Ltd, KOREA)

For RF sensitivity enhancement, the previous assisted GPS acquisition architecture adopts not only the coherent integration technique but also the non-coherent integration technique since the long coherent integration time increases the number of the frequency search cells. But the non-coherent integration technique induces the squaring loss, which is the dominant factor among the acquisition losses of assisted GPS dealing with weak GPS signals. This paper proposes an efficient architecture for weak signal acquisition in assisted GPS. In this paper, it is explained that the proposed architecture reduces the squaring loss using a modified non-coherent integration technique. Furthermore, it is...